

Remarks

Upon entry of the instant Preliminary Amendment, claims 1-18 are pending. Claim 6 has been converted from a "use" claim to a more conventional process format. Claim 12 has been amended to provide reference or subject matter for formulae II and III. The amendments are primarily a matter of form. No new matter has been added.

In view of the foregoing amendments, Applicants aver that the instant claims are now in better condition for examination on the merits. Early favorable action is respectfully solicited. If minor amendments will further prosecution, Applicants request that the Examiner contact the undersigned representative.

Respectfully submitted

David R. Crichton

David R. Crichton
Attorney for Applicants
Reg. No. 37,300

Ciba Specialty Chemicals Corporation
540 White Plains Road
P.O. Box 2005
Tarrytown, New York 10591-9005
Tel: 914-785-7124
Fax: 914-785-7102
DRC/

MAY 31 2001

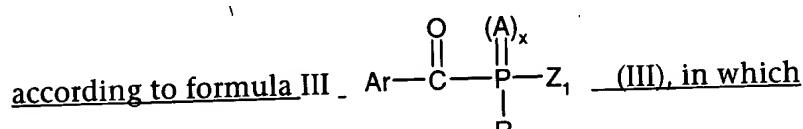
APPENDIX - MARKED UP CLAIMS

6. (amended) A method The use of compounds of the formula I as starting materials for the preparation of mono- or bisacylphosphines, mono- or bisacylphosphine oxides or mono- or bisacylphosphine sulfides comprising reacting a compound of formula I according to claim 1.

12. (amended) A photocurable composition comprising

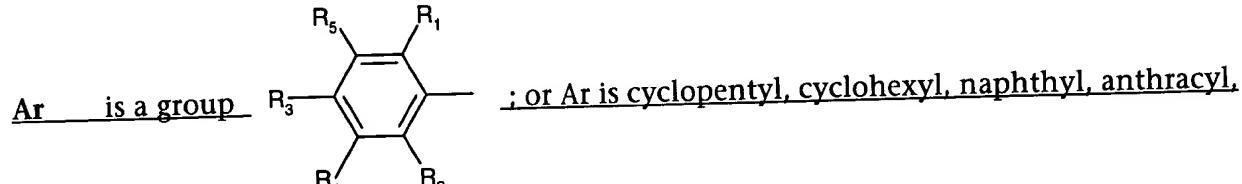
(a) at least one ethylenically unsaturated photopolymerizable compound and

(b) at least one compound of the formula II according to claim 2 or at least one compound



A is O or S;

x is 0 or 1;



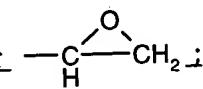
biphenyl or an O-, S- or N-containing 5- or 6-membered heterocyclic ring, where the radicals cyclopentyl, cyclohexyl, naphthyl, anthracyl, biphenyl and 5- or 6-membered heterocyclic ring are unsubstituted or substituted by halogen, C₁-C₄alkyl and/or C₁-C₄alkoxy;

R₁ and R₂ independently of one another are C₁-C₂₀alkyl, OR₁₁, CF₃ or halogen;

R₃, R₄ and R₅ independently of one another are hydrogen, C₁-C₂₀alkyl, OR₁₁ or halogen;

or in each case two of the radicals R₁, R₂, R₃, R₄ and R₅ together form C₁-C₂₀alkylene which can be interrupted by O, S or -NR₁₄:

R₆ is C₁-C₂₄alkyl, unsubstituted or substituted by C₅-C₂₄cycloalkenyl, phenyl, CN, C(O)R₁₁, C(O)OR₁₁, C(O)N(R₁₄)₂, OC(O)R₁₁, OC(O)OR₁₁, N(R₁₄)C(O)N(R₁₄), OC(O)NR₁₄, N(R₁₄)C(O)OR₁₁,

cycloalkyl, halogen, OR₁₁, SR₁₁, N(R₁₂)(R₁₃) or 

C₂-C₂₄alkyl which is interrupted once or more than once by nonconsecutive O, S or NR₁₄ and which is unsubstituted or substituted by phenyl, OR₁₁, SR₁₁, N(R₁₂)(R₁₃), CN, C(O)R₁₁, C(O)OR₁₁,

C(O)N(R₁₄)₂ and/or $\text{---} \begin{array}{c} \text{O} \\ \diagup \\ \text{C} \\ \diagdown \\ \text{H} \end{array} \text{---} \text{CH}_2$:

C₂-C₂₄alkenyl which is uninterrupted or interrupted once or more than once by nonconsecutive O, S or NR₁₄ and which is unsubstituted or substituted by OR₁₁, SR₁₁ or N(R₁₂)(R₁₃);

C₅-C₂₄cycloalkenyl which is uninterrupted or interrupted once or more than once by nonconsecutive O, S or NR₁₄ and which is unsubstituted or substituted by OR₁₁, SR₁₁ or N(R₁₂)(R₁₃);

C₇-C₂₄arylalkyl which is unsubstituted or substituted on the aryl group by C₁-C₁₂alkyl,

C₁-C₁₂alkoxy or halogen;

C₄-C₂₄cycloalkyl which is uninterrupted or interrupted once or more than once by O, S and/or NR₁₄ and which is unsubstituted or substituted by OR₁₁, SR₁₁ or N(R₁₂)(R₁₃); or C₈-C₂₄aryl(cyclo)alkyl or C₈-C₂₄aryl(cyclo)alkenyl:

R₁₁ is H, C₁-C₂₀alkyl, C₂-C₂₀alkenyl, C₁-C₈cycloalkyl, phenyl, benzyl or C₂-C₂₀alkyl which is interrupted once or more than once by nonconsecutive O atoms and which is unsubstituted or substituted by OH and/or SH;

R₁₂ and R₁₃ independently of one another are hydrogen, C₁-C₂₀alkyl, C₁-C₈cycloalkyl, phenyl, benzyl or C₂-C₂₀alkyl, which is interrupted once or more than once by O or S and which is unsubstituted or substituted by OH and/or SH; or R₁₂ and R₁₃ together are C₂-C₅alkylene which is uninterrupted or interrupted by O, S or NR₁₄:

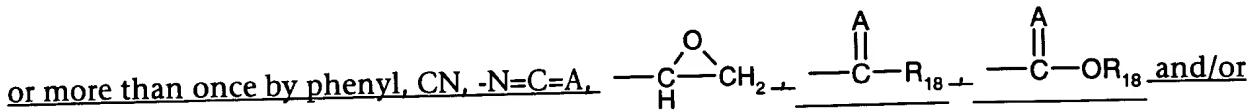
Z₁ is C₁-C₂₄alkyl, which is unsubstituted or substituted once or more than once by OR₁₅, SR₁₅,

N(R₁₆)(R₁₇), phenyl, halogen, CN, -N=C=A, $\text{---} \begin{array}{c} \text{O} \\ \diagup \\ \text{C} \\ \diagdown \\ \text{H} \end{array} \text{---} \text{CH}_2 + \text{---} \begin{array}{c} \text{A} \\ \diagup \\ \text{C} \\ \diagdown \\ \text{R}_{18} \end{array} + \text{---} \begin{array}{c} \text{A} \\ \diagup \\ \text{C} \\ \diagdown \\ \text{OR}_{18} \end{array}$

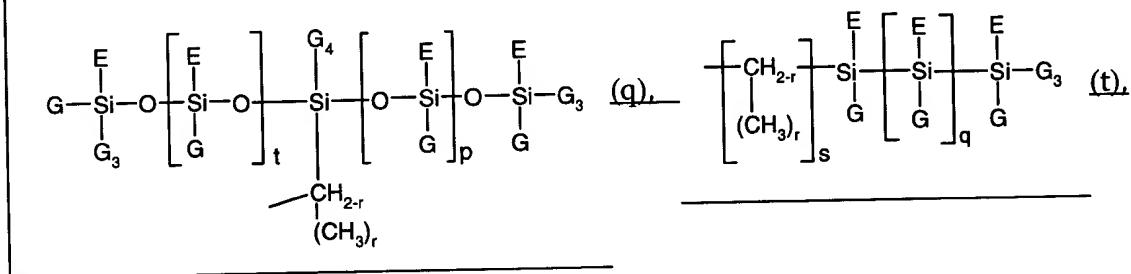
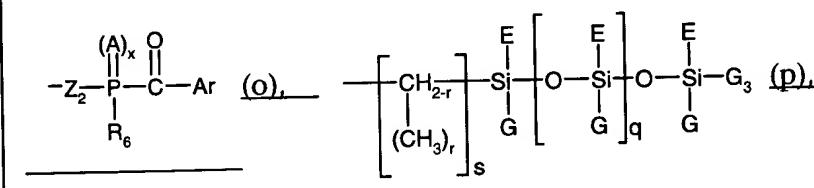
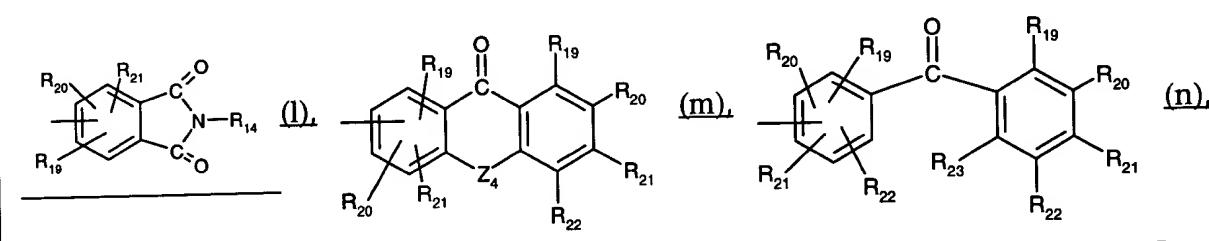
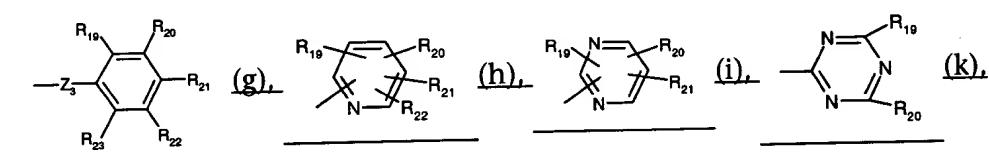
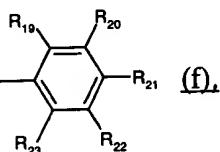
and/or $\text{---} \begin{array}{c} \text{A}_1 \\ \diagup \\ \text{C} \\ \diagdown \\ \text{N}(\text{R}_{18})_2 \end{array}$ or Z₁ is C₂-C₂₄alkyl which is interrupted once or more than once by O, S

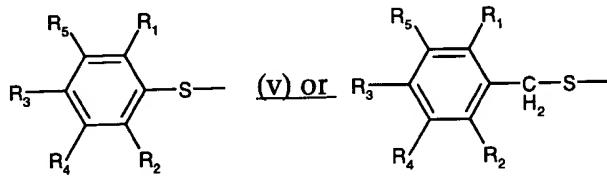
or NR₁₄ and which can be substituted by OR₁₅, SR₁₅, N(R₁₆)(R₁₇), phenyl, halogen, $\text{---} \begin{array}{c} \text{O} \\ \diagup \\ \text{C} \\ \diagdown \\ \text{H} \end{array} \text{---} \text{CH}_2 +$

$\text{---} \begin{array}{c} \text{A} \\ \diagup \\ \text{C} \\ \diagdown \\ \text{R}_{18} \end{array} + \text{---} \begin{array}{c} \text{A} \\ \diagup \\ \text{C} \\ \diagdown \\ \text{OR}_{18} \end{array}$ and/or $\text{---} \begin{array}{c} \text{A}_1 \\ \diagup \\ \text{C} \\ \diagdown \\ \text{N}(\text{R}_{18})_2 \end{array}$; or Z₁ is C₁-C₂₄alkoxy, which is substituted once



$\text{---C}(\text{A}_1)\text{---N}(\text{R}_{18})_2$; or Z_1 is $\text{---C}(\text{A})\text{---OR}_{11}$; $\text{---C}(\text{A}_1)\text{---N}(\text{R}_{16})(\text{R}_{17})$; $\text{---C}(\text{A})\text{---OR}_{11a}$ or $\text{---C}(\text{A}_1)\text{---N}(\text{R}_{18a})(\text{R}_{18b})$; or
 Z_1 is unsubstituted C_3 - C_{24} cycloalkyl or C_3 - C_{24} cycloalkyl substituted by C_1 - C_{20} alkyl, OR₁₁, CF₃ or halogen; unsubstituted C_2 - C_{24} alkenyl or C_2 - C_{24} alkenyl substituted by C_6 - C_{12} aryl, CN, (CO)OR₁₅ or (CO)N(R₁₈)₂; or Z_1 is C_3 - C_{24} cycloalkenyl or is one of the radicals



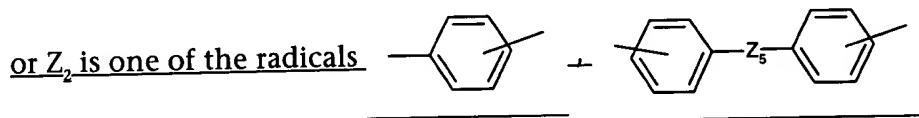


(w); or Z₁ is C₁-C₂₄alkylthio, in which the alkyl

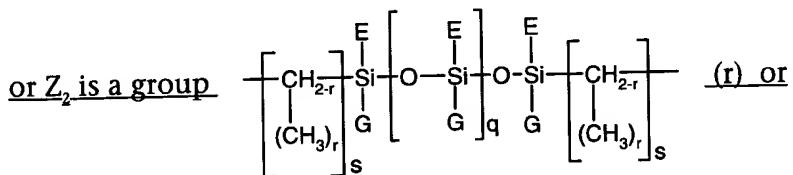
radical is uninterrupted or interrupted once or more than once by nonconsecutive O or S, and is
unsubstituted or substituted by OR₁₁, SR₁₁ and/or halogen; with the proviso that Z₁ and R₆ are not
identical;

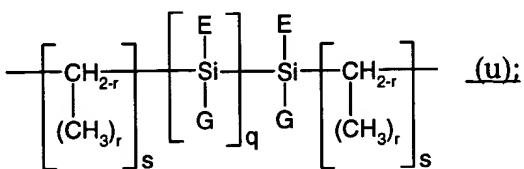
A₁ is O, S or NR_{18a}:

Z₂ is C₁-C₂₄alkylene; C₂-C₂₄alkylene interrupted once or more than once by O, S or NR₁₄; C₂-
C₂₄alkenylene; C₂-C₂₄alkenylene interrupted once or more than once by O, S or NR₁₄;
C₃-C₂₄cycloalkylene; C₃-C₂₄cycloalkylene interrupted once or more than once by O, S or NR₁₄; C₃-
C₂₄cycloalkylene; C₃-C₂₄cycloalkenylene interrupted once or more than once by O, S or NR₁₄;
where the radicals C₁-C₂₄alkylene, C₂-C₂₄alkylene, C₂-C₂₄alkenylene, C₃-C₂₄cycloalkylene and C₃-
C₂₄cycloalkenylene are unsubstituted or are substituted by OR₁₁, SR₁₁, N(R₁₂)(R₁₃) and/or halogen;



or where these radicals are unsubstituted or are substituted on the
aromatic by C₁-C₂₀alkyl; C₂-C₂₀alkyl which is interrupted once or more than once by
nonconsecutive O atoms and which is unsubstituted or substituted by OH and/or SH; OR₁₁, SR₁₁,
N(R₁₂)(R₁₃), phenyl, halogen, NO₂, CN, (CO)-OR₁₁, (CO)-R₁₁, (CO)-N(R₁₂)(R₁₃), SO₂R₂₄, OSO₂R₂₄, CF₃
and/or CCl₃;





Z₃ is CH₂, CH(OH), CH(CH₃) or C(CH₃)₂;

Z₄ is S, O, CH₂, C=O, NR₁₄ or a direct bond;

Z₅ is S, O, CH₂, CHCH₃, C(CH₃)₂, C(CF₃)₂, SO, SO₂, CO;

Z₆ and Z₇ independently of one another are CH₂, CHCH₃ or C(CH₃)₂;

r is 0, 1 or 2;

s is a number from 1 to 12;

q is a number from 0 to 50;

t and p are each a number from 0 to 20;

E, G, G₃ and G₄ independently of one another are unsubstituted C₁-C₁₂alkyl or C₁-C₁₂alkyl substituted by halogen, or are unsubstituted phenyl or phenyl substituted by one or more C₁-C₁₂alkyl; or are C₂-C₁₂alkenyl;

R_{11a} is C₁-C₂₀alkyl substituted once or more than once by OR₁₅ or $\begin{array}{c} \text{O} \\ || \\ -\text{H}-\text{CH}_2 \end{array}$; or is C₂-C₂₀alkyl

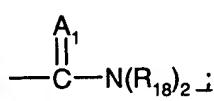
which is interrupted once or more than once by nonconsecutive O atoms and is unsubstituted

or substituted once or more than once by OR₁₅, halogen or $\begin{array}{c} \text{O} \\ || \\ -\text{C}-\text{CH}_2 \end{array}$; or R_{11a} is C₂-C₂₀alkenyl, C₃-

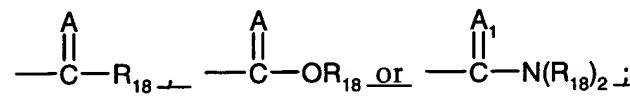
C₁₂alkynyl; or R_{11a} is C₁-C₁₂cycloalkenyl which is substituted once or more than once by halogen, NO₂, C₁-C₆alkyl, OR₁₁ or C(O)OR₁₈; or C₇-C₁₆arylalkyl or C₈-C₁₆arylcycloalkyl;

R₁₄ is hydrogen, phenyl, C₁-C₁₂alkoxy, C₁-C₁₂alkyl or C₂-C₁₂alkyl which is interrupted once or more than once by O or S and which is unsubstituted or substituted by OH and/or SH;

R₁₅ has one of the meanings given for R₁₁ or is a radical $\begin{array}{c} \text{A} \\ || \\ -\text{C}-\text{R}_{18} \end{array}$ or $\begin{array}{c} \text{A} \\ || \\ -\text{C}-\text{OR}_{18} \end{array}$ or



R₁₆ and R₁₇ independently of one another have one of the meanings given for R₁₂ or are a radical

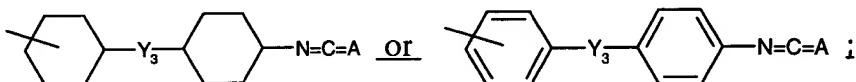
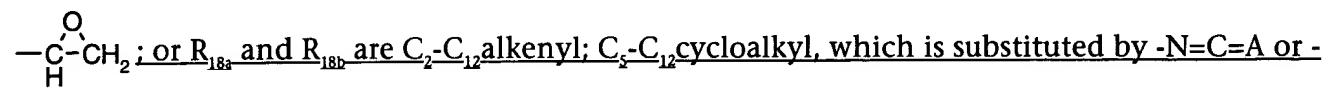


R₁₈ is hydrogen, C₁-C₂₄ alkyl, C₂-C₁₂ alkenyl, C₃-C₈ cycloalkyl, phenyl, benzyl; C₂-C₂₀ alkyl which is interrupted once or more than once by O or S and which is unsubstituted or substituted by OH;

R_{18a} and R_{18b} independently of one another are hydrogen; C₁-C₂₄ alkyl, which is substituted once

or more than once by OR₁₄, halogen, styryl, methylstyryl, -N=C=A or $\begin{array}{c} \text{O} \\ \diagdown \\ -\text{C}-\text{CH}_2 \\ \diagup \\ \text{H} \end{array}$; or C₂-C₂₀ alkyl

which is interrupted once or more than once by nonconsecutive O atoms and which is unsubstituted or substituted once or more than once by OR₁₄, halogen, styryl, methylstyryl or



Y₃ is O, S, SO, SO₂, CH₂, C(CH₃)₂, CHCH₃, C(CF₃)₂, (CO), or a direct bond;

R₁₉, R₂₀, R₂₁, R₂₂ and R₂₃ independently of one another are hydrogen, C₁-C₂₀ alkyl; C₂-C₂₀ alkyl, which is interrupted once or more than once by nonconsecutive O atoms and which is unsubstituted or substituted by OH and/or SH; or R₁₉, R₂₀, R₂₁, R₂₂ and R₂₃ are OR₁₁, SR₁₁, N(R₁₂)(R₁₃), NO₂, CN, SO₂R₂₄, OSO₂R₂₄, CF₃, CCl₄, halogen; or phenyl which is unsubstituted or substituted once or more than once by C₁-C₄ alkyl or C₁-C₄ alkoxy;

or in each case two of the radicals R₁₉, R₂₀, R₂₁, R₂₂ and R₂₃ together form C₁-C₂₀ alkylene which is uninterrupted or interrupted by O, S or -NR₁₄:

R₂₄ is C₁-C₁₂ alkyl, halogen-substituted C₁-C₁₂ alkyl, phenyl, or phenyl substituted by OR₁₁ and/or SR₁₁;

with the proviso that R₆ and Z₁ are not identical.

as photoinitiator.

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